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ORIGINAL ARTICLE

Prevalence of Thrombocytopenia in Neonates Born to Mothers with Pregnancy Induced Hypertension

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ABSTRACT

Background: Pregnant women with hypertension are at high risk to deliver a newborn with severe thrombocytopenia. Little is known concerning the magnitude of thrombocytopenia in neonates born to mothers with PIH and controversy was also present.

Objective: To determine the frequency of thrombocytopenia in neonates born to mothers with pregnancy induced hypertension.

Material & Methods: This cross sectional study was carried out at department of Neonatology, Lady Aitcheson Hospital, Lahore for 6 months. A sample of 1ml from cord blood was taken and sent to hematology laboratory. Neonatal thrombocytopenia was labeled. All the data was entered and analyzed on SPSS version 16.

Results: The mean age of babies was 13.31±7.07 days. The male to female ratio was 1.1:1. The mean platelet count of the babies was 150.23±29.39. Thrombocytopenia was present in 41.50% babies.

Conclusion: Prevalence of thrombocytopenia was 41.5% in females with PIH.

Keywords: Thrombocytopenia, Pregnancy Induced Hypertension, Mothers, Neonates, Neonatal Intensive care unit

INTRODUCTION

Thrombocytopenia is defined as platelet count <150,000/ul[1]. Thrombocytopenia is one of the commonest hematological problems in neonatal period presenting in 1-5% of newborns at birth. It is particularly common in newborns admitted to neonatal intensive care units (NICU) presenting in 22-35% of these neonates[2,3]. Evaluation of cause and treatment of thrombocytopenia in neonates can be expensive, invasive and can result in adverse outcome[4].

Pregnancy induced hypertension is a common clinical condition affecting a large number of women of child bearing age. There is five to six fold increase in morbidity and mortality in hypertensive mothers as compared to normotensive mothers[5].The overall incidence of pregnancy induced hypertension is about 9%[6]. In women with pregnancy induced hypertension (PIH), a variety of fetal and maternal complications can occur, there is increased risk of fetal loss due to placental abruption, intrauterine growth retardation and neonatal thrombocytopenia is also a major risk factor[7,8]. Neonates born to mothers with PIH are at risk for developing thrombocytopenia which is major contributing factor for neonatal morbidities.1 The most evident cause of thrombocytopenia in neonates is chronic fetal hypoxia secondary to placental insufficiency leading to reduced megakaryopoiesis[2].

Multiple studies have reported incidence of thrombocytopenia in neonatal population associated with maternal hypertension. In one study the frequency of neonatal thrombocytopenia was 9.2% in hypertensive mothers9. However, others reported that the prevalence of neonatal thrombocytopenia is 20.6% to 36.1% in neonates of mothers with PIH at different settings[10].

In our study we determined the frequency of thrombocytopenia in neonates born to mothers with PIH. There are multiple critical complications of thrombocytopenia in neonates which can increase neonatal morbidity and mortality. Little is known concerning the magnitude of thrombocytopenia in neonates born to mothers with PIH and literature which is present is controversial and lacking. We also lack local estimates which can help us to decide whether thrombocytopenia is severe complication of PIH or ignorable. Therefore, this study is designed to find the rate of thrombocytopenia in neonates born to mothers with PIH so that we can have local estimate which can be applicable to local population.

Objective: To determine the frequency of thrombocytopenia in neonates born to mothers with pregnancy induced hypertension.

MATERIAL AND METHODS

Study design: Cross Sectional Study.

Setting: Department of Neonatology, Lady Aitcheson Hospital, Lahore.

Duration of study: 6 months after approval of synopsis.

Sample size: Sample size of 130 cases was calculated with 95% confidence level, 5% margin of error and taking expected percentage of thrombocytopenia i.e. 9.2% in neonates born to mother with pregnancy induced hypertensive.

Sampling technique: Non-probability, purposive sampling

Sample Selection

Inclusion criteria: Neonates of either gender born to mothers with pregnancy induced hypertension (BP≥140/90) in a pregnant women after 20 weeks of gestation at 2

different occasions that are 4 hours apart on antenatal record of mother during pregnancy)

Exclusion Criteria

- Any neonate having congenital anomaly or illness (on clinical examination)
- Any neonate having acquired illness (on clinical examination)
- Premature neonates (gestational age<37weeks)
- Low birth weight babies (<2.5kg)

Data collection procedure: A total of 130 neonates who fulfill selection criteria were enrolled in the study after getting no objection certificate from Ethical review committee. Informed consent was obtained from parents of each case. Demographic detail (including name, age, gender, and length and birth weight) was also obtained. Then a sample of 1ml from cord blood was taken in the vial containing EDTA. Sample was sent to hematology laboratory of the hospital. Reports received and analyzed especially platelet count and neonatal thrombocytopenia was labeled (Platelet count of <150*109/L). All this information was recorded through proforma.

Data analysis: Data was entered and analyzed through SPSS 16. Mean and standard deviation was calculated for quantitative variables like age, length & weight and platelet count. Frequency and percentage was calculated for qualitative variables like gender and neonatal thrombocytopenia.

RESULTS

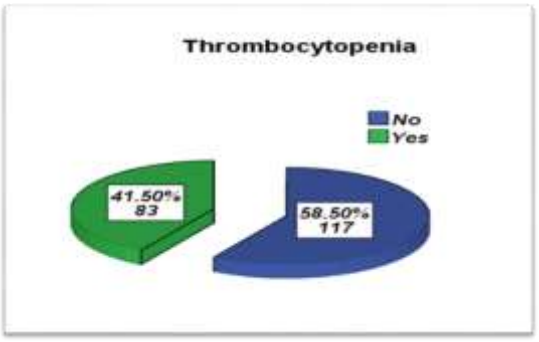
The mean age of the babies was 13.31±7.07 days. In this study the 108(54.00%) patients were male and 92(46.00%) patients were female. The male to female ratio of the patients was 1.1:1. The mean length of the babies was 51.37±2.37 cm. The mean weight of the babies was 3410.75±748.21 grams. The mean platelet count of the babies was 150.23±29.39. Table 1

Table 1: outcome of study

N	No.
Age (Days)	200
Male Female	13.31±7.07
Length (cm)	108(54%) 92(46%)
Weight (gm)	51.37±2.37
Platelet count	150.23±29.39

The thrombocytopenia was present in 83(41.50%) babies and the thrombocytopenia was absent in 117(58.50%) babies. Fig 1

Fig 1.



Distribution of Thrombocytopenia

DISCUSSION

Neonatal thrombocytopenia typically defined as a platelet count less than 150,000/uL, it can be divided into early onset (occurring within 1st 72 hrs) and late onset (occurring after 72 hrs)[11]. Two major causes of early onset thrombocytopenia are neonatal alloimmune thrombocytopenia and pregnancy induced hypertension, other causes like fetal distress, infections, chromosomal anomalies are less common[12].

PIH is one of the most common causes of both maternal and neonatal morbidity affecting about 5 to 8% of mothers[13]. In pregnancies complicated by preeclampsia, thrombocytopenia is generally identified at birth or within the first 2–3 days following delivery, with resolution by 10th days of life in most cases[14]. In addition to thrombocytopenia it can also cause prematurity IUGR, polycythemia, Necrotizing enterocollitis, and bronchopulmonary dysplasia[12]. There is variation in severity of thrombocytopenia ranging from mild (100000 to 150000) to moderate (50,000 to 99,000) to severe(<50,000). Only small percentage of individual develop sever thrombocytopenia resulting in bleeding[15].

Pregnancy induced hypertension causes placental insufficiency leading to restricted blood flow to fetus. This condition results in fetal hypoxia and impaired platelet production as a result of which fetal thrombopoitin level is high[16]. Other investigators considered placental pathology as a direct cause of neonatal thrombocytopenia. In a case–control study by Litt and Hecht it was found that there is direct relationship between placental pathologies like thrombosis or vascular lesions with neonatal thrombocytopenia independent of maternal hypertension[17]. Zook et al,found in his study that despite common occurrence of placental pathologies in patient with pregnancy induced hypertension there was no direct association between placental pathologies and thrombocytopenia[18].

In our study the mean value of platelet count of the babies was 150.23±29.39 and the thrombocytopenia was present in 83(41%) babies and males were affected more than females. Some studies are discussed below showing variable results. Bhat YR10 performed a study which results are in accordance with our study, in which 97 neonates born to PIH mothers were included and out of them 35 (36.1%) had thrombocytopenia. In 20 neonates (20.6%) thrombocytopenia was severe. Higher percentage of thrombocytopenia was associated with male gender (47.7%), low birth weight (71.4%) and prematurity (67.4%)

In another study thrombocytopenia was noted in 36% of infants of mothers with severe PIH. Out of 11 babies having thrombocytopenia,[5] babies had platelet counts less than 100,000 while the rest had counts between 100,000 to 150,000[4]. According to Burrows and Andrew the rate of neonatal thrombocytopenia was 9.2% in hypertensive patients, compared with 2.2% of control group. Although there was no difference in full term infants preterm were more at risk of thrombocytopenia[3].

There is variability in available data and difference of opinion regarding the incidence and association of pregnancy induced hypertension with neonatal thrombocytopenia. In our study we calculated local data and incidence of thrombocytopenia in neonates born to

mothers with pregnancy induced hypertension. There was no conflict of interest and no ethical restrains.

CONCLUSION

In our study the prevalence of thrombocytopenia was 41.5% in PIH mothers.

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